RANDOX
TOXICOLOGY

ELISA Solutions

ELISA Solutions

*Exclusive to Randox Toxicology

For forensic use only

What is an ELISA kit?

Randox Toxicology provides highly sensitive ELISA kits for the rapid detection of drugs and metabolites in various biological specimens. An Enzyme-Linked Immunosorbent Assay, or ELISA, is a test which uses antibodies to detect the presence of a substance. A 96-well microtitre plate is supplied precoated with an antibody. If the drug being tested is present in the sample, it will compete with the horseradish peroxidase enzyme labelled antigen for a limited number of antibody sites on the microtitre plate. Results are produced based on an enzymatic colour change.

Randox Toxicology has an ever expanding test menu which includes a range of New Psychoactive Substances, drugs of abuse, stimulants, analgesics and sedatives. Significant re-investment in Research & Development allows Randox Toxicology to develop assays with relevant values and optimise them for best performance in a variety of matrices. Offering excellent cross-reactivity and unrivalled limits of detection, Randox Toxicology develops the highest quality ELISAs available on the market, with results providing excellent correlation with confirmatory methods.

01

New Psychoactive Substances

JWH-018 / AM-2201

JWH-018 is a synthetic cannabinoid which became commercially popular in 2008 when it was identified as one of the main active ingredients in herbal blends such as 'Spice'. JWH-018 is not structurally related to marijuana, however it binds to the same cannabinoid receptor in the brain which can make the effects similar to that of THC.

Initial studies of the metabolism of JWH have highlighted metabolic processes such as ring and alkyl substituent hydroxylation, carboxylation and glucuronidation. The risk of accidental overdose and severe psychiatric complications may be more likely to occur as the type and amount of active compound may vary considerably from batch to batch.

Specificity

Compound	CR%
JWH-018	100
4-OH JWH-018 (JWH-018 4-hydroxyindole metabolite)	9
5-OH JWH-018 (JWH-018 5-hydroxyindole metabolite)	56
6-OH JWH-018 (JWH-018 6-hydroxyindole metabolite)	215
7-OH JWH-018 (JWH-018 7-hydroxyindole metabolite)	89
N-desalkyl JWH-018: LK1012 10CD194	3
(±)-JWH 018 N-(4-hydroxypentyl) metabolite	195
JWH-018 N-(5-hydroxypentyl) metabolite	231
JWH-018 N-pentanoic acid metabolite	85
JWH-018 N-(1-methylbutyl) isomer	54
JWH 018 N-(1,2-dimethylpropyl) isomer	70
JWH-018 N-(2,2-dimethylpropyl) isomer	62
JWH-018 6-methoxyindole analogue	95
JWH-018 N-(2-methylbutyl) isomer (JWH-073 2-methylbutyl homologue)	78
JWH-018 N-(3-methylbutyl) isomer (JWH-073 3-methylbutyl homologue)	217
JWH-018 2'-naphthyl-N-(3-methylbutyl) isomer	2
JWH-018 (5'-Carboxy)	206
JWH-018 (1-(4-Carboxybutyl)-1H-indol-3-yl)(naphthalen-1-yl)methanone (N-carboxybutyl)	133
JWH-073	135
4-OH JWH-073 (JWH-073 4-hydroxyindole metabolite)	15
5-OH JWH-073 (JWH-073 5-hydroxyindole metabolite)	135
6-OH JWH-073 (JWH-073 6-hydroxyindole metabolite)	162
7-OH JWH-073 (JWH-073 7-hydroxyindole metabolite)	113
JWH-073 N-(3-hydroxybutyl) metabolite	164
JWH-073 N-(4-hydroxybutyl) metabolite	255
JWH-073 N-Butanol	96
JWH-073 N-Butanoic acid metabolite	37
JWH-073 4 Butanoic Acid	38
JWH 073 2-methylnaphthyl analogue	14
JWH-073 4-methylnaphthyl analogue	10
JWH-073 N-(2-methylpropyl) isomer	113
JWH-007	2
JWH-015	3
JWH-016	3
JWH-019	35
JWH-019 5-hydroxyindole metabolite (JWH-019-M2)	38
JWH-020	22
JWH-022	102
JWH-030	6
JWH-081 2-methoxynaphthyl isomer or (JWH-267)	3
JWH-081 5-methoxynaphthyl isomer	6.5
JWH-081 7-methoxynaphthyl isomer (JWH-164)	5
JWH-081 N-(5-hydroxypentyl) metabolite	3
JWH-122	10
JWH-122 6-methylnaphthyl isomer	7
JWH-122 7-methylnaphthyl isomer	13
JWH-122 2-methylnaphthyl isomer	12
JWH-122 N-(5-hydroxypentyl) metabolite	16
JWH-147	4
JWH-164 (JWH-081 7-methoxynaphthyl isomer)	1.7
JWH-200 4-hydroxyindole metabolite	3
JWH-200 5-hydroxyindole metabolite	63
JWH-200 6-hydroxyindole metabolite	133
JWH-210 2-ethylnaphthyl isomer	2

Compound	CR%
JWH-210 7-ethylnaphthyl isomer or JWH-234	2
JWH-398	12
JWH-398 5-chloronaphthyl isomer	5
JWH-398 N-(5-hydroxypentyl) metabolite	36
AM-694	5
AM-694 3-iodo isomer	1
AM-1220	179
AM-2201	119
AM-2201 N-(4-fluoropentyl) isomer	176
AM-2201 N-(4-hydroxypentyl) metabolite	145
AM-2233	7
RCS-4 2-methoxy isomer	2
RCS-4 3-methoxy isomer	1
(+)WIN 55212-2 (mesylate)	2
Win 55,212-3 mesylate	3
WIN 55,225 (JWH-200)	127
(R)-AM1241	0.2

Sample Dilution

	Sample Dilution		Assay Range	
Drug Group	Blood	Urine	Blood	Urine
JWH-018 / AM-2201	1:1	Neat	80 ng/ml	40 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Drug Group	Matrix	LOD
JWH-018 / AM-2201	Blood	2.5 ng/ml
	Urine	0.7 ng/ml

UR144 / XLR11

Synthetic cannabinoids are chemical compounds that mimic the effects of THC, the main ingredient of cannabis. They bind to the cannabinoid receptors in the brain and were developed to treat pain. The two most common synthetic cannabinoids were JWH-018 and JWH-073. Four weeks after prohibition, second generation products were flooding the market.

New versions of these include AM1248, AKB48, UR144 and XLR11. UR144 and XLR11 are the new generation of synthetic cannabinoids and are chemically different to the first generation. New generations of synthetic cannabinoids are continuously emerging to replace the synthetic cannabinoids that have been made illegal.

Specificity

Compound	CR%
UR144 N-Pentanoic Acid	100
A-834735	111
UR144 N-(5-hydroxypentyl) metabolite	110
UR144 N-(4-hydroxypentyl) metabolite	107
A796260	88
UR144 N-(5-hydroxypentyl) β-D-Glucuronide	81
AB-005	47
XLR11 N-(3-fluoropentyl) isomer	29
XLR11	29
XLR11 N-(4-pentenyl) analog	26
UR144	19
XLR11 N-(2-fluoropentyl) isomer	16
UR144 N-(5-bromopentyl) analog	15
UR144 N-(5-chloropentyl) analog	13
UR144 Desalkyl	13
UR144 N-(heptyl) analog	6
XLR11 Degradant	3
UR144 Degradant	2
XLR11 N-(4-hydroxypentyl) metabolite	2

Sample Dilution

	Sample Dilution		Assay Range	
Drug Group	Blood	Urine	Blood	Urine
UR144 / XLR11	1:4	1:4	40 ng/ml	40 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Drug Group	Matrix	LOD
UR144 / XLR11	Blood	0.27 ng/ml
	Urine	0.95 ng/ml

JWH-250 / RCS-8

JWH-250 is a cannabimimetic indole that shows a high-affinity for both the central cannabinoid and peripheral cannabinoid receptors. JWH-250 has been identified as a component of several different 'herbal incense' products often marketed as 'not for human consumption'. Recently laboratories have detected phenylacetylindoles such as RCS-8.

Belonging to the synthetic cannabinoid category of drugs, the New Psychoactive Substance JWH-250 / RCS-8 have a similar effect to those of THC. The quantity of JWH-250 / RCS-8 within a package can vary significantly, increasing the likelihood of overdose as users are not fully aware of what is contained inside these herbal products.

Specificity

Compound	CR%
JWH-250	100
JWH-250 N-(4-hydroxypentyl) metabolite	304
JWH-250 N-(5-hydroxypentyl) metabolite	290
JWH-250 N-(5-carboxbutyl) metabolite	111
JWH-250 N-(5-carboxypentyl) metabolite	90
N-Desalkyl JWH-250	84
JWH-251	26
RCS-8	23
JWH-203	17
JWH-250 5-Hydroxyindole metabolite	3

Sample Dilution

	Sample Dilution		Assay Range	
Drug Group	Blood	Urine	Blood	Urine
JWH-250 / RCS-8	1:4	1:4	137 ng/ml	137 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Drug Group	Matrix	LOD
JWH-250 / RCS-8	Blood	0.39 ng/ml
	Urine	0.68 ng/ml

AB-PINACA

AB-PINACA is a synthetic cannabinoid usually sold as a herbal smoking mixture designed to mimic THC. Synthetic cannabinoids are classed as designer drugs which are unregulated substances that have become newly available on the market as an alternative to illegal drugs. AB-PINACA was first identified as a component of synthetic cannabis products in Japan, 2012.

As a reaction to prohibition, synthetic cannabinoid producers change the compounds and create new generations of synthetic drugs, such as AB-PINACA. As a result, accidental overdose and severe psychiatric complications may be more likely to occur because the type and amount of active compound may vary considerably from batch to batch.

Specificity

Compound	CR%
AB-PINACA N-Pentanoic acid	100
5-Fluoro AB-PINACA	98.9
5-Hydroxypentyl AB-PINACA	83.8
4-Hydroxypentyl AB-PINACA	85.2
AB-PINACA	52.4
AB-FUBINACA	35.3
ADB-PINACA Pentanoic acid metabolite	32.8
5-Fluoro AB-PINACA N-(4-hydroxypentyl) metabolite	24.1
ADB-PINACA N-(5-hydroxypentyl) metabolite	15.2
5-Fluoro ADB-PINACA	9.8
5-Fluoro ADBICA	4.7
AB-FUBINACA Carboxylic acid	4.5
AB-CHMINACA	3.8
ADBICA	0.7

Sample Dilution

	Sample Dilution		Assay Range	
Drug Group	Blood	Urine	Blood	Urine
AB-PINACA	1:4	1:3	20 ng/ml	15 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Drug Group	Matrix	LOD
AB-PINACA	Blood	0.41 ng/ml
	Urine	0.26 ng/ml

α-PVP / MDPV

α-PVP is the active ingredient in drugs commonly sold as 'bath salts', 'flakka'or 'gravel' which have gained popularity since the mid-2000s due to their potency and low cost, selling for as little as $5. α-PVP is a derivative of MDPV- the only difference being the removal of the 3,4-methylenedioxy group from the MDPV molecule.

Bath salt blends such as α-PVP are manufactured in places like China and are marketed as alternatives to internationally controlled drugs that are often adulterated with other synthetic cathinones, methamphetamine or clonazepam. Reported effects of α-PVP include euphoria, increased alertness, tachycardia, hypertension, hyperthermia, seizures and even cardiac arrest.

Specificity

Drug Group	Compound	CR%
α-PVP / MDPV	Desmethyl Pyrovalerone (α-PVP)	100
	Pyrovalerone	125.4
	3,4-Methylenedioxypyrovalerone (MDPV)	93.3
	α-Pyrrolidinopentithiophenone HCl	73.2
	Naphyrone	70.2
	4-methyl-α-pyrrolidinohexanophenone (4-MPHP)	38.1
	4'-Methyl-α-pyrrolidinobutiophenone (MPBP)	23.2
	MDPBP HCl	17.2
	4-Methoxy-PV8 HCl	11.7
	4-Fluoro-PV9 HCl	3.2
	4'-Methyl-α-Pyrrolidinopropiophenone HCl	1.8
	3,4-Methylenedioxy-α-pyrrolidinopropiophenone (MDPPP)	0.8
	Pyrrolidinopropiophenone	0.8

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
10 ng/ml	20 ng/ml	1:50	1:50	100 ng/ml	100 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
α-PVP / MDPV	Blood	1.8 ng/ml
	Urine	3.1 ng/ml

MDPV

In 2009 and 2010, a significant rise in the abuse of a new group of cathinones was reported in Western Europe and later in the USA. The growing number of cases along with the alarming severity of the effects caused by their abuse has prompted significant concern from healthcare providers and legal authorities.

MDPV, sold as 'bath salts' or 'legal highs', is described as being like amphetamine and ecstasy. The use of New Psychoactive Substances (NPS) such as MDPV, has become widespread due to these drugs being widely available on the internet and high street shops. In reaction, Randox Toxicology were the first to market with a test for 'bath salts'.

Specificity

Drug Group	Compound	CR%
MDPV	3,4-Methylenedioxypyrovalerone (MDPV) HCl	100
	3',4'-Methylenedioxy-α-pyrrolidinobutiophenone (MDPBP) HCl	96
	Naphyrone HCl	27
	Pyrovalerone HCl	17
	4'-Methyl-α-pyrrolidinohexanophenone (4'-Me-α-PHP) HCl	15
	4'-Methyl-α-pyrrolidinobutiophenone (MPBP) HCl	13
	Pentylone HCl	9
	3',4'-Methylenedioxy-α-pyrrolidinopropiophenone (MDPPP) HCl	4
	Butylone HCl	4
	Desmethyl pyrovalerone (α-PVP) HCl salt	2

Sample Dilution

Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine
1:4	1:4	3400 ng/ml	3400 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
MDPV	Blood	20 ng/ml
	Urine	20 ng/ml

Mephedrone / Methcathinone

Mephedrone is a synthetic cathinone derivative sold as a white powder which produces stimulant effects likened to amphetamine. Methcathinone is a psychotropic phenylalkylamine derivative which can cause hallucinations, fever, tachycardia, brachycardia, moderate hypotension, neurotoxic effects and convulsions.

Synthetic drugs like mephedrone are often sold as 'bath salts' or 'research chemicals' and are legal and widely available in many countries. The physical effects of mephedrone may include nose-bleeds, dilated pupils, blurred vision, erratic heartbeat or muscular tension in the jaw and limbs. The mental effects can include 'head rushes', euphoria, time distortions and even hallucinations.

Specificity

Drug Group	Compound	CR%
Mephedrone / Methcathinone	Mephedrone HCl	100
	Methedrone HCl	79
	Methylone HCl	63
	Flephedrone HCl	45
	R(+)-Methcathinone HCl	44
	Methcathinone HCl	43
	3-Fluoromethcathinone HCl (3-FMC)	16
	Methylethcathinone HCl	10
	Ethylone HCl	7
	N-ethylcathinone HCl	4
	Butylone HCl	4

Sample Dilution

Sample Dilution			Assay Range		
Blood	Oral Fluid	Urine	Blood	Oral Fluid	Urine
1:4	Device Dependant	1:4	64 ng/ml	Device Dependant	64 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Mephedrone / Methcathinone	Blood	0.57 ng/ml
	Oral Fluid	0.9 ng/ml
	Urine	0.4 ng/ml

Mitragynine (Kratom)

Kratom is the name given to the leaves and tree preparations from the *Mitragyna species* Korth, a native tree to South East Asia. In 2012, kratom was one of the most common 'legal highs' sold online in Europe, followed by synthetic cathinones. Low doses produce a stimulant effect whereas high doses produce a sedative effect.

The leaves from the rubiaceous plant *Mitragyna speciosa* have been used for their opium like effects and several alkaloids have been derived from the leaves. Mitragynine, the main active component of kratom, acts on the μ and δ - opioid receptors. At low doses mitragynine acts on the δ receptors and at higher doses it crosses over to act on the μ opioid receptors.

Specificity

Drug Group	Compound	CR%
Mitragynine	Mitragynine	100
	O-desmethyl mitragynine	18.1
	7-hydroxy mitragynine	0.4

Sample Dilution

Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine
1:4	1:4	10 ng/ml	10 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Mitragynine	Blood	0.54 ng/ml
	Urine	0.71 ng/ml

DOx Series

The 2, 5-dimethoxyamphetamines (2,5-DMA) are a class of New Psychoactive Substances (NPS). They are psychoactive, hallucinogenic stimulants which act as some of the most potent serotonin 5-HT receptor agonists. The psychoactive properties of these drugs are said to range from a stimulant effect at lower doses, with hallucinogenic effects at higher doses.

Reported adverse effects include tachycardia, seizures, renal failure and delusional psychosis. A complication associated with 2,5-DMA use is severe vasoconstriction, which can cut off circulation to the limbs and extremities, and in some severe cases lead to amputation. The 2,5-DMA are reputedly more potent than traditional amphetamines so there is the risk of overdose.

Specificity

Drug Group	Compound	CR%
DOx Series	DOB (2,5-dimethoxy-4-bromo-amphetamine)	100
	Bromo-DragonFLY (HCL) (1-(8-Bromobenzo[1,2-b;4,5-b]difuran-4-yl)-2-aminopropane)	96
	DOI HCl (2,5-dimethoxy-4-iodo-amphetamine)	73
	DON (2,5-dimethoxy-4-nitro-amphetamine)	57
	DOET (2,5-dimethoxy-4-ethyl-amphetamine)	50
	DOM (2,5-dimethoxy-4-methyl-amphetamine)	49
	DOC (2,5-dimethoxy-4-chloro-amphetamine)	47
	2,4,5-Trimethoxyamphetamine	5

Sample Dilution

Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine
1:4	1:4	40 ng/ml	40 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
DOB	Blood	0.8 ng/ml
	Urine	1.1 ng/ml

NBOMe

25I-NBOMe (2C-I-NBOMe, Cimbi-5) is a psychedelic drug and derivative of the substituted phenethylamine psychedelic 2C-I. NBOMe is a powerful hallucinogen with only a small amount needed to cause effects that can last between six and ten hours including feelings of euphoria, mental and physical stimulation and unusual body sensations.

The United States Drug Enforcement Administration illegalised 25I-NBOMe, 25C-NBOMe and 25B-NBOMe as Schedule I drugs under the Controlled Substances Act in November 2013. In the UK, it was made a Class A drug in June 2014. Legislation to illegalise NBOMe compounds has been passed in Australia, Israel, Russia, Sweden and Romania.

Specificity

Drug Group	Compound	CR%
NBOMe	25I NBOMe	100
	25H NBOMe	230
	25C NBOMe	225
	25E NBOMe	218
	25T2 NBOMe	195
	25T7 NBOMe	165
	25N NBOMe	157
	25T4 NBOMe	146
	25D NBOMe	141
	Mescaline NBOMe	130
	25P NBOMe	118
	25B NBOMe	101
	RH-34	5.8

Sample Dilution

Cut Off	Sample Dilution	Assay Range
Urine	Urine	Urine
1 ng/ml	1:4	4 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
NBOMe	Urine	0.81 ng/ml

02

Analgesics

Buprenorphine

Buprenorphine is a semi-synthetic opioid analgesic derived from thebaine, a component of opium, and is a powerful partial agonist analgesic. It is effective in treating pain and is 25 to 40 times more potent than morphine. Since the 1980s it has been widely prescribed for the treatment of moderate to severe pain.

Like other opioids commonly abused, buprenorphine is capable of producing significant euphoria. As buprenorphine becomes more clinically used in heroin substitution treatment, it was found that withdrawal syndrome was milder than with methadone and that fewer symptoms emerge during detoxification. There is an increasing need for methods suitable for high-volume screening.

Specificity

Drug Group	Compound	CR%
Buprenorphine	Buprenorphine	100
	Norbuprenorphine	499
	Norbuprenorphine-3β-D-glucuronide	139
	Buprenorphine-3β-D-glucuronide	16

Sample Dilution

Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine
1:4	1:4	40 ng/ml	40 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Buprenorphine	Blood	0.57 ng/ml
	Urine	0.75 ng/ml

Fentanyl

Fentanyl is a synthetic opioid, with approximately 100 times the potency of morphine. The effects of fentanyl are indistinguishable from those produced by insufflation of street heroin, therefore fentanyl has high abuse potential. In the 1970s fentanyl appeared in the illicit drug market with over 12 different analogues having been produced clandestinely and identified by the DEA.

Intravenous administration is most commonly used but fentanyl can also be smoked or insufflated. Fentanyl is extensively metabolised, with only 0.4 to 6% of the dose excreted in urine as unchanged drug. The main metabolite is norfentanyl. Other metabolites that have been identified are hydroxyfentanyl, hydroxynorfentanyl and despropionylfentanyl.

Specificity

Drug Group	Compound	CR%
Fentanyl	Norfentanyl	100
	Fentanyl	790
	Benzylfentanyl	134
	Thienylfentanyl	121
	Acetylfentanyl	37
	ω-hydroxyfentanyl	37
	(±)*cis*-3-methylfentanyl	31
	α-methylfentanyl	20

Sample Dilution

Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine
1:10	1:4	250 ng/ml	100 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Fentanyl	Blood	0.67ng/ml
	Urine	0.51ng/ml

ELISA kit

FE3505

96 tests

Control kit

FE3506

4x2x1 ml

Methadone

Methadone is a long acting μ opioid receptor agonist with potent central analgesic, sedative and antitussive actions. Methadone inhibits ascending pain pathways, alters perception of and response to pain, and produces generalised CNS depression. It is used as an analgesic for the relief of moderate to severe pain and is used in the detoxification treatment of opioid dependence.

When used to treat addiction, methadone suppresses withdrawal symptoms for 24 to 36 hours. When administered orally, methadone is rapidly absorbed from the gastrointestinal tract and can be detected in the blood within 30 minutes. The half-life of (R,S)-methadone is 15-60 hours, and 10-40 hours for (R)-methadone.

Specificity

Drug Group	Compound	CR%
Methadone	Methadone	100
	EDDP	<1
	EMDP	<1
	LAAM	<1

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
10 ng/ml	300 ng/ml	1:20	1:200	100 ng/ml	1000 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Methadone	Blood	0.18 ng/ml
	Urine	1.85 ng/ml

Opiates

Opium, is obtained from the unripe seed pods of the opium poppy. Opium resin contains two groups of alkaloids: phenanthrenes (including morphine and codeine) and benzylisoquinolines (including papaverine). Morphine is by far the most prevalent and important alkaloid in opium, consisting of 10-16% of the total.

Opiates work by decreasing the brain's perception of pain and in addition can create feelings of euphoria. This mood enhancement often leads to addiction and physiological dependence. Side effects of opiates can include sedation, dizziness, nausea, vomiting, constipation, respiratory depression, physical dependence and tolerance.

Specificity

Drug Group	Compound	CR%
Opiates	Morphine	100
	6-Acetylmorphine	636.1
	6-Acetyl-codeine	441.7
	Thebaine	150.6
	Codeine	104.3
	Ethylmorphine HCl	99.7
	Desomorphine	82.4
	Morphine 3βD Glucuronide	45.6
	Morphine 6βD Glucuronide	34.5
	Hydrocodone	22.1
	Hydromorphone	20
	Dihydrocodeine	15.3
	Norcodeine	0.8
	Normorphine	0.6

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
25 ng/ml	300 ng/ml	1:30	1:50	360 ng/ml	600 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Opiates	Blood	1.15 ng/ml
	Urine	5.53 ng/ml

Oxycodone

Oxycodone is a semi-synthetic narcotic analgesic derived from Thebaine. The drug was synthesised in 1916 to improve on existing opioids in the hope that it would retain the analgesic effects of morphine and heroin with less dependence. To some extent this was achieved, as oxycodone does not have the same immediate effect as heroin or morphine with a shorter action time.

Oxycodone is clinically used under the trade name OxyContin since 1939 for the relief of moderate to severe pain. At present, oxycodone is the most widely abused opioid drug in America with around 100,000 emergencies admitted to US hospitals per year. In light of this, oxycodone abuse has notably risen in recent years.

Specificity

Drug Group	Compound	CR%
Oxycodone	Oxycodone	100
	Hydrocodone	94.6
	Noroxycodone	88.6
	Codeine	1.3

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
10ng/ml	10ng/ml	1:10	1:10	50 µg/ml	50 µg/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Oxycodone	Whole Blood	3.85 ng/ml
	Urine	2.08 ng/ml

Pregabalin

Pregabalin is an anti-epileptic inducing analogue of the inhibitory neurotransmitter gamma-aminobutyric acid (GABA). Pregabalin was invented to replace gabapentin as both drugs have similar pharmacokinetic properties; however pregabalin offers a higher level of potency. The drug was approved by the European Union in 2004.

Recently, reports have highlighted a rise in the number of prescriptions issued particularly within the prison population, with pregabalin ranking amongst the top 30 most prescribed medications. In light of this, its abuse has notably risen in recent years. As it becomes more prevalent, there is an increasing need for methods of high-volume screening.

Specificity

Drug Group	Compound	CR%
Pregabalin	Pregabalin	100
	DMAA	2.2
	Vigabatrin	<1
	Felbamate	<1
	Retigabine	<1
	Lacosamide	<1
	Stiripentol	<1
	Acetylcholine Cl	<1
	D-Glutamic Acid	<1
	L- Glutamic Acid	<1
	Tiagabine HCl	<1
	Gamma-Aminobutyric Acid	<1
	N-methylpregabalin	<1
	Valporic Acid	<1
	Levetiracetam	<1
	Topiramate	<1
	Serotonin	<1
	Carbamazepine	<1
	Gabapentin	<1
	Phenobarbital	<1

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
2 µg/ml	2 µg/ml	1:10	1:10	50 µg/ml	50 µg/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Pregabalin	Blood	0.159 µg/ml
	Urine	0.05 µg/ml

Tramadol

Tramadol is a synthetic opioid-receptor agonist that has been used clinically as a narcotic analgesic since 1977. Tramadol also inhibits the reuptake of monoamines such as norepinephrine and serotonin, which enhances its analgesic effect. O-desmethyltramadol has 2-4 times the analgesic efficacy of the parent drug.

In all body tissues and blood the drug concentration is greater than the N-desmethyl and O-desmethyltramadol metabolites, and O-desmethyltramadol is always greater in concentration than the N-desmethyl metabolite. There are numerous reports of tramadol toxicity and abuse. Overdoses may cause agitation, hypertension, tachycardia and seizures.

Specificity

Drug Group	Compound	CR%
Tramadol	Tramadol	100
	O-desmethyl-tramadol (Hydroxytramadol)	57
	N-desmethyl-tramadol (Nortramadol)	4
	rac N,O-didesmethyl-tramadol (Norhydroxytramadol)	1
	Phencyclidine (PCP)	<0.1

Sample Dilution

Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine
1:40	1:40	100 ng/ml	100 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Tramadol	Blood	0.86 ng/ml
	Urine	1.4 ng/ml

World Renowned Antibodies

By manufacturing our own antibodies, we provide the highest quality toxicology screening solution for any laboratory setup.

03

Stimulants

Amphetamine

Amphetamines are synthetic drugs, which cause powerful CNS stimulation resulting in euphoric effects similar to that of cocaine. They can cause increased alertness, self-confidence and the ability to concentrate but can also suppress appetite and lead to insomnia. Following oral use, the effects start within 30 minutes and last for many hours.

Abuse of amphetamines is a significant problem - abusers can develop a tolerance for the drug, resulting in a psychological dependence and leading to drug abuse. Chronic abuse of amphetamine can lead to weight loss, hallucinations and paranoid psychosis, while acute overdose can cause agitation, hyperthermia, convulsions, coma and respiratory and/or cardiac failure.

Specificity

Drug Group	Compound	CR%
Amphetamine	d-Amphetamine	100
	S(+)-Amphetamine	123
	BDB	71.4
	(±)-Amphetamine	61.9
	(±)-MDA	54.5
	Phentermine	50
	PMA HCl	37.2
	MDEA	0.8
	R(-)-Amphetamine	<15
	S(+)-Methamphetamine	<10
	(+) Methamphetamine	<1
	MDMA	<1
	(±)-MBDB HCl	<1
	PMMA HCl	<1
	TFMPP	<1
	Methylphenidate	<1
	Ephedrine HCl	<1
	(1S,2S)-(+)-Pseudoephedrine	<1
	R(-) Methamphetamine	<1
	(±)-Methamphetamine	<1
Cathinone/Bath Salts	Methylone HCl	<1
	R(+) Methcathinone HCl	<1
	S(-) Methcathinone HCl	<1
	3-Fluoromethcathinone HCl	<1
	Methylethcathinone	<1
	N-Ethylcathinone HCl	<1
	Ethylone HCl	<1
	Buphedrone	<1
	MDPBP HCl	<1
	MDPV HCl	<1
	Naphylone HCl	<1
	MDPPP HCl	<1
	Cathinone	<1
	Butylone	<1
	Flephedrone HCl	<1
	Methedrone	<1
Designer Amphetamine Analogues	DOB	5.1
	DOM	1.2
	DOET	<1
	TMA	<1
	2CB	<1
	2CE	<1
	2CI	<1
Benzo Fury	5-APB HCl	50.7
	5-APDB HCl	47
	6-APB HCl	28.4
	5-IT	13.1
	5-MAPB HCl	1.4
	5-MAPDB HCl	0.6

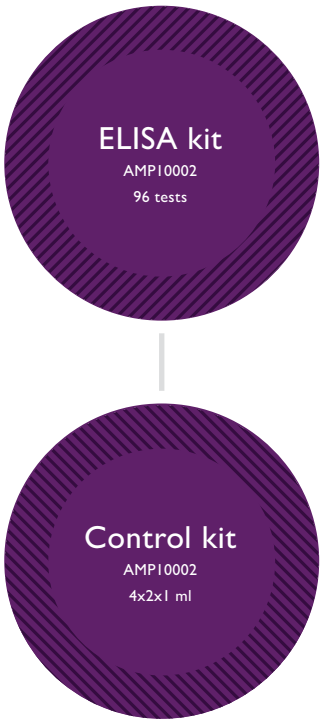
Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
50 ng/ml	300/500 ng/ml	1:10	1:100	150 ng/ml	1500 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Amphetamine	Blood	11.7 ng/ml
	Urine	108.2 ng/ml



BZG / Cocaine Metabolite

Cocaine has a rapid onset however effects are short-lived, giving rise to a reinforcing action and strong psychological dependence. Overdose can result in convulsions and cardiac arrest. Cocaine is 91% bound to plasma proteins. It is metabolised to a variety of compounds, the major metabolites being Benzoylecgonine (BZG), Ecgonine, and Ecgonine Methyl Ester.

BZG is produced upon loss of the methyl group and is the major urinary metabolite. The half-life for cocaine is short, approximately 0.8 ± 0.2 hours, while the half-life of BZG is 6 hours. Unchanged parent cocaine accounts for 1-9%, BZG accounts for 35-54%, whilst Ecgonine Methyl Ester accounts for approximately 32-49% of drug eliminated in the 24 hour urine.

Specificity

Drug Group	Compound	CR%
BZG / Cocaine Metabolite	Benzoylecgonine	100
	m-Hydroxybenzoylecgonine	124
	Cocaine	117.2
	Ecgonine	0.2
	Cocaine-N-oxide	<1
	Norcocaine	<1
	Ecgonine Methyl Ester	<1

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
50 ng/ml	300/500 ng/ml	1:30	1:30	750 ng/ml	750 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
BZG / Cocaine Metabolite	Blood	2.96 ng/ml
	Urine	1.12 ng/ml

Methamphetamine

Methamphetamine is a CNS stimulant that causes hypertension and tachycardia with feelings of increased confidence, sociability and energy. Acute intoxication causes serious cardiovascular disturbances as well as behavioural problems. It is metabolised in the liver by aromatic hydroxylation, N-dealkylation, and deamination; at least seven metabolites have been identified in urine.

The half-life of methamphetamine is 4 to 5 hours. Following oral administration of methamphetamine hydrochloride, approximately 62% of the administered dose is excreted in urine within the first 24 hours, with metabolites and unchanged drug accounting for about two-thirds and one-third, respectively, of the recovered drug.

Specificity

Drug Group	Compound	CR%
Methamphetamine	(+) Methamphetamine	100
	PMMA HCl	157.5
	S(+)-Methamphetamine	83.8
	MDMA	83.7
	(±)-Methamphetamine	40.4
	MDEA	2.8
	BDB	1.1
	(1S,2S)-(+)-Pseudoephedrine	0.2
	d-Amphetamine	<1
	l-Amphetamine	<1
	(±)-Amphetamine	<1
	S(+)-Amphetamine	<1
	R(-)-Amphetamine	<1
	R(-)-Methamphetamine	<1
	l-Methamphetamine HCl	<1
	(±)-MDA	<1
	(±)-MBDB HCl	<1
	Phentermine	<1
	TFMPP	<1
	PMA HCl	<1
	Methylphenidate	<1
	Ephedrine	<1
Cathinone/Bath Salts	Methylone HCl	<1
	R(+) Methcathinone HCl	<1
	S(-) Methcathinone HCl	<1
	3-Fluoromethcathinone HCl	<1
	Methylethcathinone	<1
	N-Ethylcathinone HCl	<1
	Ethylone HCl	<1
	Buphedrone HCl	<1
	MDPBP HCl	<1
	MDPV HCl	<1
	Naphyrone HCl	<1
	MDPPP HCl	<1
	Cathinone	<1
	Butylone	<1
	Flephedrone HCl	<1
	Methedrone	<1
Designer Amphetamines	DOB	<1
	DOM	<1
	DOET	<1
	TMA	<1
	2C-E	<1
	2C-B	<1
	2C-I	<1
Benzo Fury	5-MAPB HCl	146.5
	5-MAPDB HCl	41.8
	6-APB HCl	1.1
	5-APB HCl	<1
	5-APDB HCl	<1
	5-IT	<1

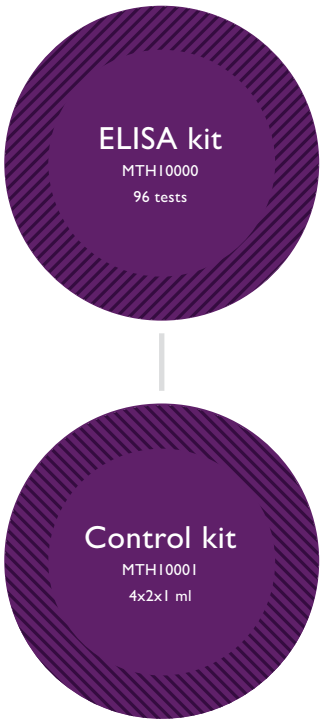
Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
50 ng/ml	300/500 ng/ml	1:20	1:100	1800 ng/ml	9000 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Methamphetamine	Blood	0 ng/ml
	Urine	37.7 ng/ml



THC (Cannabis)

Cannabis (marijuana) contains chemicals called cannabinoids, including cannabinol, cannabidiol, cannabinolidic acids, cannabigerol, cannabichromene, and several isomers of tetrahydrocannabinol (THC). THC binds to cannabinoid receptors on the surface of nerve cells- these are found in high density in certain areas of the brain.

Smoking results in rapid absorption with peak Δ9-THC plasma concentrations occurring prior to the end of smoking, indeed Δ9-THC can be detected in plasma within seconds of inhalation. Concentrations vary depending on the potency and the way in which the drug is smoked, however, peak plasma concentrations of 100-200 ng/mL are routinely encountered.

Specificity

Drug Group	Compound	CR%
THC	(-)-11-nor-9-carboxy-Δ^9-THC	100
	(±)-11-Nor-Δ^9-THC carboxylic acid glucuronide	29
	(±)-11-Hydroxy-Δ^9-THC	14.9
	Δ^9-THC	14.8
	Δ^8-THC	6.5
	Cannabinol	2.9
	Cannabidiol	<1

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
50 ng/ml	50 ng/ml	1:5	1:5	300 ng/ml	300 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
THC	Blood	23.9 ng/ml
	Urine	17.2 ng/ml

04

Sedative Hypnotics

Barbiturates

Barbiturates are categorised as ultra-short, short-intermediate or prolonged acting. Ultra-short acting barbiturates are used as anaesthetic inducers. Short-intermediate acting barbiturates are used as hypnotics and longer acting drugs of this class are used as anxiolytics and anticonvulsants (eg. Phenobarbital).

Barbiturates have a narrow therapeutic margin and as a result were associated with frequent cases of death by overdose. Even at therapeutic doses, there is a possibility of the development of tolerance and addiction. For these reasons the use of barbiturates has been phased out, although they are still used for anaesthesia and to treat seizures.

Specificity

Drug Group	Compound	CR%
Barbiturates	Phenobarbital	100
	Secobarbital	184.7
	Cyclopentobarbital	132.8
	Amobarbital	109.9
	Butabarbital	77.5
	Pentobarbital	76.5
	Butalbital	32.1
	Barbital	20.5

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
50 ng/ml	200 ng/ml	1:25	1:100	375 ng/ml	1500 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Barbiturates	Blood	17.3 ng/ml
	Urine	42.7 ng/ml

Benzodiazepines

Benzodiazepines are a group of structurally related CNS depressant drugs that are prescribed due to their wide range of uses. Benzodiazepines act as a sedative and slow down the body's functions. This reduces brain activity in the areas of the brain responsible for rational thought, memory, emotions and essential functions such as breathing.

Benzodiazepines have the potential to be abused, both in high doses and in low therapeutic doses. Chronic abuse leads to blurred vision, confusion, slow reflexes, slurred speech and hypotension. Overdose and death are usually the result of the combination of use with other drugs or alcohol rather than taken alone.

Specificity

Drug Group	Compound	CR%
Benzodiazepines	Diazepam	100
	Alprazolam	252.2
	Nordiazepam	187.1
	Estazolam	128.7
	Midazolam	109.2
	Oxazepam Glucuronide	100.5
	Bromazepam	97.1
	Oxazepam	90.8
	Clobazam	75.1
	Temazepam	69.1
	Alpha-OH-Alprazolam	51.7
	Nitrazepam	49.7
	N-Desmethylflunitrazepam	35.2
	Phenazepam	34.8
	Temazepam Glucuronide	29.2
	Triazolam	26.8
	Lorazepam	25.7
	Lorazepam Glucuronide	15.5
	Flunitrazepam	11.8
	Clonazepam	6.4
	Lormetazepam	5.7
	Prazepam	1.0

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
10 ng/ml	200 ng/ml	1:5	1:40	100 ng/ml	800 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Benzodiazepines	Blood	6.62 ng/ml
	Urine	32.64 ng/ml

Meprobamate

Meprobamate is a drug marketed as a sedative, anxiolytic agent or muscle relaxant that has potential for abuse, especially when combined with alcohol or other CNS depressants. Meprobamate over dosage produces CNS depression similar to barbiturate and neurological symptoms include lethargy, stupor, slurred speech, headache and weakness.

In the United States, meprobamate is listed as a Schedule IV drug in the Controlled Substances Act. However meprobamate's parent drug carisoprodol, which is widely prescribed for musculoskeletal conditions, is not subject to federal control even though it has potential for abuse. Abuse often develops for the sedative and hypnotic effects.

Specificity

Drug Group	Compound	CR%
Meprobamate	Meprobamate	100
	Carisoprodol	66.7
	Meprobamate-N-ß-D-glucuronide	15.2
	Mebutamate	11.0

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
50 ng/ml	50 ng/ml	1:5	1:5	1000 ng/ml	1000 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Meprobamate	Blood	7.64 ng/ml
	Urine	4.78 ng/ml

Z Drugs

The Z-drugs are a group of drugs commonly referred to as the 'non-benzodiazepines' that may be prescribed for short term use to deal with severe sleeping difficulties. Z-drugs differ pharmacokinetically in their elimination half-lives, but are all short acting compared with classical benzodiazepines.

Often users are unaware of the serious health risks involved in the misuse of these drugs including risk of coma, respiratory depression and death associated with excess doses in combination with alcohol or other CNS depressants. Reported psychosocial effects include depressed mental activity, memory loss, personality and mood changes, lethargy, chronic paranoia and aggression.

Specificity

Drug Group	Compound	CR%
Zaleplon	Zaleplon	100
Zolpidem	Zolpidem Zolpidem Metabolite 1 (Zolpidem Phenyl-4-carboxylic acid)	100 37
Zopiclone	Zopiclone N-desmethylzopiclone HCl Zopiclone-N-oxide Eszopiclone	100 109 87 5

Sample Dilution

	Sample Dilution		Assay Range	
Analyte	Blood	Urine	Blood	Urine
Zaleplon	1:5	1:5	220.6 ng/ml	220.6 ng/ml
Zolpidem	1:5	1:5	44.85 ng/ml	44.85 ng/ml
Zopiclone	1:5	1:5	493.1 ng/ml	493.1 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Zaleplon	Blood	0.72 ng/ml
	Urine	0.50 ng/ml
Zolpidem	Blood	0.52 ng/ml
	Urine	0.40 ng/ml
Zopiclone	Blood	2.99 ng/ml
	Urine	3.40 ng/ml

ELISA kit
Zaleplon - ZD3487
96 tests

ELISA kit
Zolpidem - ZD3485
96 tests

ELISA kit
Zopiclone - ZD3486
96 tests

Control kit
ZD3490
4x2x1 ml

05 Others

Dextromethorphan

Dextromethorphan is the d-isomer of 3-methoxy-N-methylmorphinan, a synthetic analogue of codeine. It is found in numerous cough syrups, tablets and capsules as the hydrobromide salt in amounts of 2.5-30 mg/dosage unit. At the recommended dosages, dextromethorphan is a safe drug. However at higher dosages it can have euphoric, stimulant and dissociative effects.

It has been reported that the abuse of dextromethorphan in adolescents has become widespread. Known side effects of dextromethorphan abuse can include confusion, dizziness, double or blurred vision, slurred speech, impaired physical coordination, abdominal pain, nausea and vomiting, rapid heartbeat, drowsiness and hallucinations.

Specificity

Drug Group	Compound	CR%
Dextromethorphan	Dextromethorphan hydrobromide monohydrate	100
	Dextrorphan	43.2
	(±)-nordextromethorphan	16.0
	(+)-3-hydroxymorphinan hydrobromide	0.8
	(+)-3-methoxymorphinan hydrochloride	0.1
	N-desmethyldextrorphan	0.1

Sample Dilution

Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine
1:20	1:20	400 ng/ml	400 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Dextromethorphan	Blood	1.64 ng/ml
	Urine	1.82 ng/ml

Ketamine

Ketamine is a powerful general anaesthetic drug which can be used for operations on humans and animals. Effects of abusing ketamine include hallucinations, confusion, agitation, panic attacks, increased blood pressure, memory impairment, reduced sensations in the body and can even make users physically incapable of moving.

Ketamine has a very short half-life and rapid clearance from the body. It is metabolised by N-demethylation, to yield the active metabolite norketamine, which is then followed by a hydroxylation process yielding hydroxyl-norketamine (HNK). The HNK can then undergo glucuronidation conjugation. This test detects the presence of norketamine.

Specificity

Drug Group	Compound	CR%
Ketamine	Norketamine	100
	Dehydronorketamine	4.47
	Ketamine	2.89

Sample Dilution

Sample Dilution		Assay Range	
Urine			
Dilution	Extraction	Dilution	Extraction
1:20	1:2	200 ng/ml	20 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	Diluted Sample	Extracted Sample
Norketamine	Equine Urine	14.6 ng/ml	0.76 ng/ml
	Human Urine	10.8 ng/ml	0.69 ng/ml

PCP

Phencyclidine, 1-(1-phenylcyclohexyl) piperidine, is also known as PCP and 'Angel Dust'. It is a synthetic drug developed in the 1950s as an anaesthetic and analgesic but was removed from the market due to its hallucinogenic properties and unpredictable behavioural reactions, which occurred following anaesthesia.

PCP still has a legitimate use as a veterinary tranquilliser, however, in the 1960s PCP became a popular recreational drug leading to widespread street drug use. This can often result in incidences of overdose, intoxication and death. The toxic effects can include: hypertension, seizures, coma and respiratory depression.

Specificity

Drug Group	Compound	CR%
PCP	PCP	100
	Dextromethorphan	<1

Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
5 ng/ml	25 ng/ml	1:10	1:20	100 ng/ml	200 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
PCP	Blood	0.69 ng/ml
	Urine	0.79 ng/ml

Tricyclic Antidepressant (TCA)

The TCAs comprise of a number of drugs including Amitriptyline, Amoxapine, Desipramine, Doxepin, Imipramine, Nortriptyline, Protriptyline and Trimipramine. The TCAs are similar not only in structure but also in pharmacological effects. They work by inhibiting the reuptake of serotonin and norepinephrine, two important neurotransmitters in the CNS.

Overdoses of TCAs are amongst the most common causes of drug poisonings in the emergency room. They are second only to analgesics as the most frequently taken drug in fatal overdose. Toxic effects are seen in patients with plasma concentrations greater than 450-500 ng/ml. Major toxicity is associated with concentrations above 1000 ng/ml.

Specificity

Drug Group	Compound	CR%
TCA	Nortriptyline	100
	Imipramine N-oxide	1127
	N-desmethyl Trimipramine	396.5
	Imipramine	294
	Trimipramine	238
	Desipramine	206
	Cyclobenzaprine	201
	Amitriptyline	190
	Opipramol	167
	Promazine	117
	Maprotiline	96
	Doxepin	95
	Clomipramine	76
	Protriptyline	67
	Northiaden (Nordothiepin)	63.2
	Cyproheptadine	61
	Lofepramine	58
	Dothiepin	50
	Chlorpromazine	24.3
	Norclomipramine HCl	22.1
	2-Hydroxy imipramine	19.5
	Nordoxepin	19.4
	Perphenazine	17.3
	Prochlorperazine	9.3
	10-OH amitriptyline	6.4
	2-OH desipramine	5.1
	Quetiapine Fumarate	4.5
	Thioridazine HCl	0.5
	Carbamazepine	0.3
	Cetirizine diHCl	0.3
	Orphenadrine HCl	0.2
	Amoxapine	0.1
	Hydroxyzine diHCl	<0.1
	Oxcarbazepine	<0.1
	Diphenhydramine HCl	<0.1
	Carbamazepine 10,11 epoxide	<0.1
	10-Hydroxynortriptyline	<0.1
	Iminostilbene	<0.1
	Mianserin	<0.1

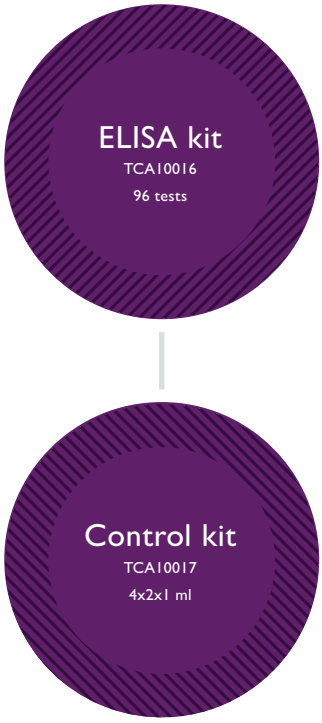
Sample Dilution

Cut Off		Sample Dilution		Assay Range	
Blood	Urine	Blood	Urine	Blood	Urine
25 ng/ml	100 ng/ml	1:10	1:30	500 ng/ml	1500 ng/ml

A dilution factor has been applied to each assay for urine and blood to achieve the cut offs stated above. A lower cut off may be selected provided it is greater than the sensitivity of the assay.

Limit of Detection

Analyte	Matrix	LOD
Nortriptyline	Blood	10.9 ng/ml
	Urine	33.6 ng/ml



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The ELx800 microplate reader conserves valuable bench space, yet still delivers outstanding performance due to the reliability of this ELISA reader.

Speed reading

The ELx800 microplate reader has the ability to read 96-wells in 30 seconds, quickly delivering highly accurate results to any toxicology laboratory.

Multiple plate formats

ELx800 applications are expanded to include kinetic and well area scanning measurements in microplates from 6 to 384 wells.

Optimal performance

Superior hardware design facilitates optimal performance and the robust design of the microplate reader makes the ELx800 an ideal long term solution for any laboratory.

High accuracy

Multiple curve fitting options ensures high accuracy and facilitates the use of a range of assays on the ELx800 microplate reader.

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